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Effects of a Visual Script with Multiple Peer Responses on the Reciprocal Responses of Preschool-Aged Children During Play

Shea Manship

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FACULTY COMMITTEE:

Committee Chair: Dr. Sara Snyder

Committee Members/Readers:

Dr. Tiffany Hornsby

Dr. Geralyn Timler

Amanda Wadsworth

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Abstract

A primary focus of many early childhood educational settings is the development of appropriate play skills. The purpose of this study was to determine the effectiveness of using a visual script that included multiple peer responses on the participants' appropriate reciprocal responses to peers during play time. A concurrent multiple baseline design across participants was used to determine if the use of the visual script would increase the number of appropriate reciprocal responses to peers, and if the average duration of play following successful initiation would increase. The researcher observed two preschool-aged children during free play. During free play, the two participants did not appropriately initiate play interactions at a high rate and the average duration of play was short. The researcher then taught the participants to use an iPad with an interactive visual script that included multiple peer responses. The participants then used the script in the classroom during free play. The results indicate that the use of the visual script increased the number of appropriate reciprocal responses to the peer during play time, as well as the average duration of play.

Keywords: play skills, scripts, reciprocal responses, preschool

Introduction

There is an increasing body of evidence that suggests that the primary focus of most early childhood educational settings should be the development of appropriate play skills (Bergen, 2002). Through play, children develop problem-solving skills, social and linguistic competence, and academic skills (Bergen, 2002). Teaching children to play allows them to develop the language, communication, and social skills that are needed for them to be successful both at school and in their natural environment (Barton & Wolery, 2008). Play sets the occasion for communicative interactions with adults and peers, as well as teaching positive social skills (Barton & Wolery, 2008). Developing play skills also increases the likelihood that young children will learn in their natural environments (Barton & Wolery, 2008).

Children with autism spectrum disorder (ASD) and intellectual disability often engage in social play less frequently than their typically-developing peers (Hestenes & Carroll, 2000). While there are numerous forms of play, the two types that special education teachers, therapists, and other professionals tend to focus on are cooperative play and play with objects (Barton & Wolery, 2008). Play with objects is more concrete because students are taught to use a toy in a way that it was designed (e.g., stacking blocks, pressing buttons that light up, etc.). While typically developing children often learn how to play with objects through exploration of their natural environment, students with disabilities may require more systematic and explicit instruction (Hestenes & Carroll, 2000). Teaching children to play with objects is important because it gives them access to potentially enjoyable leisure activities, as well as teaches the appropriate use of manipulatives.

On the other hand, cooperative play is abstract and is usually a more difficult skill to teach explicitly. Students need to be able to interact with their peers and respond appropriately. Most interventions that aim to improve cooperative play skills use video modeling, social stories, and scripts (Barton & Wolery, 2008; Boudreau & D'Entremont, 2010; Ganz & Flores, 2008; Gray, 2003; Lee, Lo, & Lo, 2017). Cooperative play as a general skill is important because it teaches children the skills needed to interact with the environment and engage with peers (Barton & Wolery, 2008). While it is not as common, teaching children to respond to their peers 'play preferences is taught as well (Najdowski, et al., 2018).

When looking at cooperative play, explicit instruction is difficult because a majority of the play interaction depends on the behavior of peers. During cooperative play, students need strong social skills in order to be successful. This includes initiating and responding to social stimuli, taking verbal turns, sustaining social contact, and negotiating conflicts (Beckman & Leiber, 1994). Students, with or without disabilities, who have difficulty with social skills are likely to have difficulty engaging in play interactions (Craig-Unkefer & Kaiser, 2002).

Statement of the Problem

Play skills instruction is an essential component of early childhood education. These skills serve as a gateway for learning important language and communication skills that will allow students to interact with their peers as they get older (Barton & Wolery, 2008). There are numerous studies that evaluate the effectiveness of play skills instructional strategies. The majority of these studies focus on playing with objects or initiating play with a peer. A number of studies involve the researcher giving the peer a script so that the play interaction is facilitated. What the literature lacks is instructional strategies that teach the students how to appropriately

respond to peers' play preferences, or how to respond when the peer does not want to engage in the same activity.

Purpose of the Study

The purpose of this study was to determine the effectiveness of using a visual script that includes multiple peer responses on the participants' appropriate reciprocal responses to the peer during play time. Specifically, the study sought to answer the following questions:

1. Will the use of a visual script that includes multiple peer responses increase the number of appropriate reciprocal responses to the peer during play time?
2. Following successful initiation and reciprocal responding with the use of the visual script, will the duration of the participants' play interactions increase?

This study adds to the current literature on play skills instruction by looking beyond playing with objects and initiating playing with peers. Instead, the study focused on a method of teaching students to respond appropriately to their peers. The unit of analysis was the preschool-aged students (ages 3-5) participating in the study.

Literature Review

This literature review will begin by defining the key concepts and terms that will be discussed in the present study. It will then discuss the theoretical framework surrounding the research. Finally, it will examine the various methods used to teach play skills. The literature included for review is comprised of scholarly articles, dissertations, and peer-reviewed articles. The resources were found using the research databases on Education Research Complete, ERIC, PsycNET, and Google Scholar.

Definition of Terms

1. *Visual script* — a tangible support that uses pictures and words to show the participant what to do and/or say in response to a peer
2. *Reciprocal response* — what the participant does and/or says in response to the peer's actions and/or words
3. *Augmentative and Alternative Communication (AAC)* — systems that "attempt to compensate and facilitate, temporarily or permanently, for the impairment and disability patterns of individuals with severe expressive and/or language comprehension disorders." (ASHA, 1993)
4. *Verbal behavior* — behavior that is reinforced through the mediation of another person's behavior (Cooper, Heron, & Heward, 2008, p. 528)
5. *Verbal operant* — component of expressive language (Skinner, 1957)
6. *Intraverbal* — occurs when verbal discriminative stimulus evokes a verbal response that does not have point-to-point correspondence with the verbal stimulus (Skinner, 1957)

- *Discriminative stimulus (S^D)*— stimulus in the presence of which responses of some type have been reinforced and in the absence of which the same type of responses have occurred and not been reinforced (Cooper, Heron, & Heward, 2008, p. 41)
- *Point-to-point correspondence* — relation between the stimulus and response or response product that occurs when the beginning, middle, and end of the verbal stimulus matches the beginning, middle, and end or the verbal response (Cooper, Heron, & Heward, 2008, p. 531)

Theoretical Framework

Skinner (1957) provides a conceptual analysis of verbal behavior. According to Cooper, Heron, and Heward (2008), "verbal behavior is defined as behavior that is reinforced through the mediation of another person's behavior" (p. 528). Skinner's theory of verbal behavior differs from linguists' theories in that its primary focus is on the function of language rather than the structure (Cooper, et al., 2008).

There are six elementary verbal operants of verbal behavior: mand, tact, echoic, intraverbal, textual, and transcription (Skinner, 1957). In terms of play skills, responding to peers falls primarily under the operant of intraverbals. The intraverbal operant occurs when verbal discriminative stimulus evokes a verbal response that does not have point-to-point correspondence with the verbal stimulus (Skinner, 1957). For example, when asked a question, an individual responds with an answer that is not exactly the same words as the question. Developing an intraverbal repertoire allows individuals to answer questions and talk about objects and events that are not necessarily physically present (Cooper, et al., 2008, p. 532).

Along with playing with toys in a functional way, a key component of play skills is developing the ability to initiate social stimuli, respond to social stimuli, and engage in verbal

turn taking, all of which are part of an intraverbal repertoire (Craig-Unkefer & Kaiser, 2002) When a peer responds that they want to play with a different toy, the child needs to be able to respond appropriately in order to play successfully. While children are playing cooperatively, they communicate with each other using their intraverbal repertoire.

Methods of Teaching Play Skills

While there are numerous methods of teaching play skills, a majority of the literature focuses on the use of scripts, video-modeling, and/or social stories. To date, one study has examined a method of teaching children with autism to identify and respond appropriately to the preferences of others during play.

Scripts

Schank and Abelson (1977) explain the term *scripts* as a way for individuals to organize and understand situations that are associated with routine activities and events. While these scripts are internal, generalizing them to an external form has "the potential to facilitate interaction in familiar routines by establishing common behavioral repertoires as children gain experience with conventional social exchanges according to a predetermined script" (Goldstein & Cisar, 1992, p. 266). Because young children have relatively limited experience in conventional social exchanges, using a script can set the occasion for engaging in appropriate behaviors during routine activities. Script training, therefore, can be used to teach appropriate responses in social interactions such as play.

Ganz and Flores (2008) applied this idea in order to evaluate the effects of using visual strategies in play groups for children with ASD and their peers. Three children with autism and four typically-developing peers participated in play groups. The children were instructed to play during the baseline condition. Following baseline, the peers were given script cards that told

them to get their friend's attention, play with the same toys, and respond when a friend talks. During the intervention condition, the play groups used the script cards. The results showed that the participants with ASD, none of whom were given the script cards, began to use the scripted phrases more frequently following intervention. The participants with ASD used unscripted phrases more frequently as well.

Ganz and Flores (2010) used the previous study to discuss a potential strategy to implement visual scripts with a preschool student with ASD. The five step teaching procedure includes the following:

1. Choose theme and prepare setting and materials
2. Choose learner objectives for child with ASD
3. Write the child's script
4. Teach the script to the child
5. Develop peer instruction cards and teach them to typically developing peers

By systematically teaching the use of scripts to preschool students, they begin to understand the social requirements that are associated with play activities (Schank and Abelson, 1977).

Similarly, Taylor and Iacono (2003) used a multiple baseline design across toy sets to examine the use of scripts for a preschool-aged child with communication impairments. In addition to a script, the researchers modeled the play skills and allowed the participant to use an AAC device. The intervention condition consisted of two stages: scripting and modeling play with signing and speech (intervention B), and scripting and modeling play with signing, speech, and a dynamic display speech generating device (intervention BC). The findings indicated that modeling and scripted play activities resulted in increased symbolic play, but the addition of the AAC device did not change responding significantly.

The literature suggests that the use of scripts in teaching play skills to preschool-aged children increases both functional play skills (Taylor & Iacono, 2003) and cooperative play skills (Ganz & Flores, 2008). As noted by Taylor and Iacono (2003), the use of other methods of teaching play skills in conjunction with scripts is also beneficial. Various methods of instruction are discussed in the following sections.

Social Stories/Narratives

According to Gray (2003), "a social story is a short story—defined by specific characteristics—that describes a situation, concept, or social skill using a format that is meaningful for people with ASD" (p.1). Social Stories can be used for a wide variety of situations, and they are frequently used to teach social skills to individuals with ASD. Play skills require the use of social skills, therefore the use of Social Stories is fitting when providing instruction.

It should be noted that the term *social narrative* is often times used interchangeably with the term *Social Stories*. Social narratives "describe social situations for learners with ASD by providing relevant cues, explanation of the feelings and thoughts of others in the social situation, and descriptions of appropriate behavior expectations" (Sam, 2015). Autism Focused Intervention Resources and Modules (AFIRM) identifies social narratives to meet their evidenced-based practice criteria based on the review of numerous single case designs. However, many of these studies yielded highly variable data that often times showed a trend in baseline conditions (Barry & Burlew, 2004; Schneider & Goldstein, 2010). A number of studies also focused on either treatment packages that included social narratives, or utilized another instructional method in tandem (Chan & O'Reilly, 2008; Schneider & Goldstein, 2010). The

current body of evidence is not sufficient enough to claim that social narratives on their own are effective.

Social Stories initially appear to be a sufficient method for teaching the social skills needed to engage in cooperative play, however they are not considered an evidence-based strategy due to the lack of research demonstrating their effectiveness (Kokina & Kern, 2010). This lack of evidence can be seen in the research conducted by Crozier and Tincani (2007). The authors identified a target behavior for each of the three participants. One of the participant's target behaviors was talking to peers. An ABCACBC design was used to compare the effectiveness of using just Social Stories to using Social Stories and prompts. The results indicate that the participant talked to his peers at the same frequency during the baseline and just Social Stories conditions (A and B respectively). When prompting was added (condition C), the participant talked to his peers at a significantly higher frequency.

Malmberg, Charlop, and Gershfeld (2015) conducted a second study that demonstrates similar results. The authors utilized a variation of a multiple baseline design across behaviors to compare the effectiveness of using just Social Stories with using the components most often used in social stories treatment packages (i.e. prompting). The conditions included baseline, Social Stories, prompting, and follow up. The most prominent difference between the research conducted by Malmber et al. (2015) and Crozier and Tincani (2007) is that the former study separated the Social Stories and prompting conditions, whereas the latter did not. It was found that for both participants, learning criterion was only achieved in the prompting condition. These results indicate that using Social Stories alone is not an effective way of teaching cooperative play skills.

Video-Modeling

Albert Bandura's work on social learning theory led to the emergence of modeling as a way of teaching new skills. His research demonstrates that children can acquire a large number of skills by observing other people complete the same skill (Bandura, 1977). Video modeling, therefore, uses the same theory to teach desired behaviors via video representation. Individuals first watch a video demonstration of a particular behavior, and are then given the opportunity to imitate the model (Bellini & Akullian, 2007). The individuals in the video can be peers, siblings, or adults. If the individual who is learning the skill is also the individual in the video, this is considered video self-modeling (VSM). VSM allows learners to watch a video of themselves successfully performing a skill (Dowrick, 1999). Both video modeling and VSM are evidence-based methods that have been shown to be effective when teaching individuals with ASD social-communication skills and functional skills that generalize across settings, as well are maintained following intervention (Bellini & Akullian, 2007).

Boudreau and D'Entremont (2010) used video modeling to improve the pretend play skills of preschoolers with ASD. The researchers used a multiple baseline design across participants. The participants first viewed a video of an adult playing with a toy set, then they were given the opportunity to play with the toy set independently. While this intervention did increase the modeled actions and scripted verbalizations of the participants, an added reinforcement session during the video modeling phase (i.e., participants were reinforced for imitating behaviors) further increased the frequency of the same behaviors. The modeled actions continued to occur at a high level during the generalization and maintenance phases as well.

Lee, Lo, and Lo (2017) conducted similar research, with the primary difference being the use of VSM instead of video modeling. The researchers used a multiple probe design across

three sets of toys to analyze the effects of VSM on functional play skills. The conditions included baseline, VSM, and maintenance. Under the baseline condition, the participant was asked to play with the toys (farm toys, doctor's clinic toys, and rescue toys). During the VSM condition, the participant watched a video of himself completing a skill that had not yet been mastered (feedforward). Under the maintenance condition, the participant played with the toys without watching the video. It was found that the use of VSM significantly increased the percentage of appropriate demonstrations of play actions across all three toys.

While both of the previous studies focused on the acquisition of functional play skills (i.e. play with objects), the same method of instruction can be used to teach cooperative play skills. Malmberg, Charlop, and Gershfeld (2015) conducted two experiments that compared treatment methods of teaching social skills to children with ASD. The first experiment utilized a multi-element and concurrent multiple baseline design to compare the effectiveness of Social Stories and video modeling. The target behaviors included were sharing, social commenting, greetings, and turn-taking. The findings showed that the percentage of trials with target social behavior only showed significant change when video modeling was used. These results indicate that video modeling is an effective method of teaching the social skills that are utilized during play interactions.

Other Methods

While a majority of the literature focuses on the instruction of an individual's play skills, few discuss methods of teaching students how to behave in response to their peers. Najdowski, et al. (2018) utilized a multiple baseline design across participants to evaluate the effects of teaching children with autism to identify and respond appropriately to the preferences of others during play. There were two assessment periods, and each consisted of three conditions:

baseline, training, and post-training. Within the training condition, there were a number of sub-conditions. These included not asking mid-play questions, not presenting rules, presenting only the preference rule, not presenting rules again, and a novel person. The first assessment evaluated the participants' ability to answer post-play preference questions about what play partners liked/disliked. The second assessment evaluated their ability to make appropriate toy offers when play partners indicated wanting to play something else (Najdowski, et al., 2018). It was found that the participants answered post-play questions correctly at a significantly higher level during training, as well as after training (post-training). The participants also made appropriate toy offers at a significantly higher level during training, as well as after training.

This research addresses the critical component of play skills that is commonly left out in many instructional methods. Playing cooperatively requires students to understand what their peers want to play, and respond appropriately to their preferences. The critical component of this play interaction is responding appropriately to peers' questions and comments. Najdowski, et al. (2018) breaks down the steps of this skill to teach students how to recognize their peers' play preferences and respond to those preferences. Many instructional methods rely on the assumption that this skill can be taught in one step. Therefore, it is not broken down into smaller skills, which in turn makes it more difficult to teach. Despite the advancement that the authors made in terms of addressing this critical component of a play interaction, they neglect to address the participants' preferences. The intervention is considered a success if the participants choose toys that correctly align with their peers' preferences. However, choosing a toy solely because a peer wants to play with it does not make the play interaction successful. All children involved in the interaction should have their preferences honored.

Research Gap

There are many studies that demonstrate the importance of play skill instruction for young children, as well as the various methods used to teach these skills. The current literature contains evaluations of the effectiveness primarily of using scripts, video-modeling, and Social Stories as tools to teach play skills. However, a majority of these studies focus on playing with objects or initiating playing with a peer. There are far fewer studies that consider teaching appropriate responses to peers' play preferences. This study will add to the literature regarding the appropriate reciprocal responses to a peer during play time, while still using one of the common tools for instruction (scripts).

Method

This paper discusses the method and design used to examine the effects of using a visual script with multiple peer responses on the reciprocal responses of preschool-aged students during play. This paper includes a description and justification of the sample, data collection instruments, data collection procedures, and analysis of the data. Finally, the paper identifies and describes internal and external validity, reliability, generalizability, and limitations.

Participants and Setting

The participants in this study attended an early childhood education program at a mid-sized southeastern university. The target population in this study was preschool-aged students who had difficulty responding to their peers' play preferences (as reported by teachers).

Purposive sampling was used to identify preschool-aged participants (ages 3-5). Students were selected based on specific behaviors that they engaged in on a regular basis, according to teacher report. These behaviors included, but were not limited to the following:

- Playing alone instead of with peers for a majority of the school day
- Engaging in negative behaviors (e.g. tantrums, vocal protest, physical aggression) when a peer suggests a different toy or activity
- Leaving a play interaction when a peer suggests a different toy or activity
- Refusal to participate in activities or play with toys that a peer suggests

The students identified demonstrated some attempts to play with peers prior to intervention, but did so inconsistently or inappropriately. This included behaviors such as walking up to peers but not saying anything, asking to play but then walking away, or only asking to play on occasion (less than twice per school day). A questionnaire was given to all of the teachers at the school.

The questionnaire asked specific questions to help identify students as potential candidates. The teacher questionnaire is included in Appendix A.

Once potential participants had been identified by their teachers, an informational flier was given to the family of the student. This flier used family-friendly language to explain the purpose of the study and the procedure that was to be used. A consent form was also included for parents/guardians to sign if they wanted their child to participate.

Two participants were recruited for this study. Liam was a 5-year-old male in one of the preschool classes (ages 4 and 5) at the university-based preschool. This was his second year attending this school, but his first year attending for a full day. His teachers described his behavior as “standing to the side during play, but wanting to engage” and “not asking to play even though he wants to.” Both teachers explained that this behavior occurred everyday during indoor and outdoor play. When asked what usually happens after this behavior occurs (typical consequence), the teachers reported that Liam “cries and yells at the peers for being mean.” They also noted that he continues to stay in the area and tell a teacher that he wants to play.

A second student in the same classroom as Liam was identified by teachers. Liam met the inclusion criteria more closely than the other student, therefore he was chosen. The researcher did not include two students from the same class in order to limit threats to internal validity.

Kaleb was a 4-year-old male in the full-day early preschool class (ages 3 and 4) at the university-based preschool. This was his first year attending the school. The teachers described his behavior as “entering other children’s play without considering what they are playing, and then attempting to change the play.” Both teachers explained that this behavior occurred everyday during indoor and outdoor play. When asked what usually happens after this behavior

occurs (typical consequence), the teachers reported that Kaleb “upsets the play that is in progress” or “feels hurt and rejected.”

It should be noted that Kaleb was receiving behavior analytic services from the primary researcher during the duration of the study, which included behavior support for the classroom teacher. Prior to receiving support (first half of the study), Kaleb was engaging in biting during play. This was a low-frequency behavior (five occurrences total across five months), but a DRO (differential reinforcement of other behaviors) procedure was put in place about halfway through the study. Kaleb received teacher attention and verbal praise (e.g. “Nice job using your words! I am so proud of you!”) on a FI5 schedule (i.e. every five minutes) during the post training phase of the study. The attention given was brief and did not interfere with the initiation of play. The teacher was instructed not to give any praise related to the play that was in progress. Kaleb was briefly interrupted during play, but he continued engaging in the same activity after the teacher walked away.

Materials

The participants used the toys and other materials in their classroom during each session. During intervention, the participants used an iPad with an interactive script created on Boardmaker. The script had a white background with black text that told the participant what to do or say. There was a small speaker icon that allowed the participant to tap the screen and have the words read out loud. There was also a line drawing on the screen to support the text. There was a green arrow in the bottom right-hand corner that the participant could tap to move to the next page. When the participant got to a screen with more than one choice (i.e. the peer said yes/no when asked to play), there were two buttons to choose from. When tapped, the green (yes) and red (no) buttons opened the next page that corresponded with the peer’s response. Each

slide of the script is included in Appendix H. There are notes on some pages indicating the page that would open next when certain options are selected.

Description of Data Collection Instruments

The researcher used observation forms (written notes) to collect data, as well as a timer. The steps required for successful play interaction are organized into a task analysis (TA). The observation forms included a review of each step in the task analysis. The data sheet that was used is attached in Appendix B. Validity was ensured by providing clear and specific operational definitions of each behavior included in the task analysis. The operational definitions are included in Appendix F and were printed on the back side of the data sheet for reference. Reliability was ensured by assessing interobserver agreement (IOA) as described in a later section. Data were collected for 15 minutes (per participant) four days a week for two months.

A social validity survey was also used. Both the teacher and the student were given surveys in which they recorded their answers to a questionnaire. The teacher and student social validity surveys are included in appendices D and E respectively.

Data Collection Procedures

Event recording was used to collect data. A task analysis of the behaviors that were required in the play interaction was included on the data sheet. The data sheet is included in Appendix B. For each behavior included in the task analysis, the researcher recorded a + or a -. If a + was recorded, it symbolized that the participant performed the behavior correctly and independently. If a - was recorded, it symbolized that the participant performed the behavior incorrectly, or did not respond.

Once the data were collected, the researcher recorded the totals. First, a total count of correct and independent responses was be calculated. This was in the form of number of correct

and independent responses out of the total number of opportunities to respond. The total number of opportunities differed based on how the peer responded, as well as how the participant responded. Next, a total percentage of correct and independent responses was calculated. This was done by dividing the numerator by the denominator from the previous total and multiplying the resulting number by 100.

In addition to the data collected using the task analysis, the researcher recorded the duration of the play interaction. A timer was started when the peer and the participant began playing. The timer was stopped when one of the children either stopped playing or left the area (with the exception of leaving as part of the play interaction). The conversation between the participant and the peer in order to initiate the play was not included in the duration. Duration was recorded in minutes and seconds.

The social validity survey for teachers and students (Appendices D and E respectively) was given at the end of the last session. For the teacher survey, the researcher left the room and instructed the teacher to put the survey in a designated mailbox. For the student survey, the researcher again left the room, but instructed the teacher to read the questions to the participant. The student survey was also placed in the designated mailbox. Both the teacher and the student were told that the survey was not a requirement.

Description of Research Design

The purpose of this study was to determine the effectiveness of using a visual script that includes multiple peer responses on the participants' appropriate reciprocal responses to a peer during play time. The research utilized a quantitative research design. A multiple baseline design across participants was used to demonstrate experimental control. The baseline phases for each participant began concurrently. The participant who showed the most stable responding began

the intervention phase first. After the first participant demonstrated stable responding in the intervention phase, the second participant began intervention. This pattern continued until all participants had started intervention (Johnston & Pennypacker, 2009).

Two research questions were addressed in this research study:

1. Will the use of a visual script that includes multiple peer responses increase the number of appropriate reciprocal responses to the peer during play time?
2. Following successful initiation and reciprocal responding with the use of the visual script, will the duration of the participants' play interactions increase?

Procedures

Baseline

Both participants were familiar with the other students in the classroom and had interacted with them for roughly five months. During baseline, each participant engaged in free play as they usually did while at school. Teachers, assistants, and practicum students were instructed to not give any specific directions related to the play interaction. Adults only intervened if there was a concern for any of the children's safety or well-being. Teachers and practicum students still interacted with the student as they normally did during free play. Data were collected during a 15-minute block of time during free play. If the play interaction was interrupted by a class-wide transition (e.g. bathroom, line up to go outside) or it exceeded the 15-minute time period, a note was made on the data sheet indicating the reason for termination.

Script Training

Script training was conducted for roughly 6 days following the baseline condition, or until mastery criteria was met. During this training, the participants learned to use the visual script. Training was conducted for each participant for approximately 15 minutes, four days per

week. The researcher conducted the training. Training took place in the hallway outside of the classroom each day.

During the first training session, the researcher introduced the script and explained its purpose. This was done by saying, “This is a tool that you can use to help you play with your friends. When you tap the screen, it tells you what you can say to your friend.” The participant was then given two minutes to explore the script by tapping on the screen, moving through the various response options, and listening to the iPad read the script aloud.

Once the participant had the opportunity to explore the script for two minutes, the researcher provided systematic instruction using a task analysis to teach the participants how to use the visual script appropriately. A constant time delay (CTD) procedure was used to provide instruction. Collins (2012) outlines the following steps for each trial when using the CTD procedure:

1. Secure the participant’s attention.
2. Deliver the task direction.
3. Wait a predetermined number of seconds for the participant to respond.
4. Deliver the controlling prompt.
5. Wait the predetermined response interval.
6. Praise the correct response or repeat the prompt for incorrect responses or failures to respond (p. 56-57).

Two delay intervals were used during training: a 0-second delay interval for the first session and a 3-second delay interval for all subsequent sessions. The controlling prompt delivered was a combination of a vocal prompt (“Touch _____.) and a gesture prompt (the researcher pointed to the symbol that the participant should tap).

In order to teach the appropriate use of the script, the researcher role played scenarios with the participant. The role play scenarios and data collection tables are included in Appendix C. There were four sets of scenarios. The participant moved to the next set once mastery criteria was met. The set was considered mastered when the participant responded correctly before a prompt was given in 100% of opportunities for three consecutive sessions (one session is considered one completed scenario). Once all four sets were mastered, training was concluded. The sets included the following scenarios:

1. The participant asks the researcher to play with a toy or engage in an activity and the researcher says yes.
2. The participant asks the researcher to play with a toy or engage in an activity and the researcher says no. The participant asks if the researcher wants to play with something else. The researcher says yes. The participant then asks what the researcher wants to play with. The researcher chooses a different toy to play with. The participant says that they would like to play with that toy as well.
3. The participant asks the researcher to play with a toy or engage in an activity and the researcher says no. The participant then asks what the researcher wants to play with. The researcher chooses a different toy to play with. The participant says that they would not like to play with that toy. The participant then starts from the beginning and pretends the researcher is a new peer.
4. The participant asks the researcher to play with a toy or engage in an activity and the researcher says no. The participant asks if the researcher wants to play with something else. The researcher says no. The participant then starts from the beginning and pretends the researcher is a new peer.

In order to mimic the natural responses of peers, the researcher collected data on peer responses during baseline. These responses, or different forms of accepting or denying a request to play, were then used by the researcher during script training.

Post Training

Once the participant met mastery criteria for each set, the post training phase began. This phase looked identical to the baseline phase with the exception of the participant's use of the visual script. Prior to the beginning of play time, the participant was given the iPad with the script and the researcher reminded them that they can use it to help them play with their friends. The researcher also suggested some toys or activities that the participant could engage in. The researcher then collected data during a 15-minute block of time during free play using the same data sheet that was used during the baseline phase. If the play interaction was interrupted by a class-wide transition (e.g. bathroom, line up to go outside) or it exceeded the 15-minute time period, a note was made on the data sheet indicating the reason for termination. The skill was considered mastered when the participant responded correctly and independently in 100% of opportunities per interaction for five consecutive sessions.

Generalization

Once the participant met mastery criteria during the post training phase, the generalization phase began. During this phase, the participant was not given the script during playtime. Prior to play time each day, the teacher (rather than the researcher) explained that they can use what they learned to help them play without the script. They did this by saying, "Today I want you to try and think about the script in your head. When you play with your friends, think about what the script tells you to say." The teacher also suggested some toys or activities that the participant could engage in. The researcher then collected data during a 15-minute block of time

during free play using the same data sheet that was used during the baseline and post training phases. If the play interaction was interrupted by a class-wide transition (e.g. bathroom, line up to go outside) or it exceeded the 15-minute time period, a note was made on the data sheet indicating the reason for termination.

Description of Data Analysis

Visual analysis was used to analyze the data collected from this study. This was done using graphs that represent each participant's behavior. The first step was to use the graphs to determine which participant showed the most stable responding during the baseline phase. The participant that showed the most stable responding began the intervention phase first. If stable responding was not demonstrated by either participants after 10 sessions, a participant would have been chosen at random to begin intervention. Visual analysis was again used to determine which participant would begin the intervention phase next. This pattern continued until both participants had started the intervention phase (Johnston and Pennypacker, 2009). Visual analysis was also used to determine when the next participant would begin intervention. The second participant began intervention when the first participant had shown stable responding in the intervention phase. If stable responding was not demonstrated by the participant after 10 sessions, the next participant would have begun intervention regardless. Again, this pattern continued until all participants had started the intervention phase (Johnston and Pennypacker, 2009).

Results were interpreted through visual analysis as well. If the graphs showed that each participants' behavior changed only when the intervention phase was implemented, then it was inferred that the behavior change was the result of the independent variable (the visual script). Because a multiple baseline design across participants was used, experimental control was

shown when the change in behavior occurred after the intervention was implemented. The participant who remained in baseline the longest should show low-level, stable responding prior to intervention (Johnston & Pennypacker, 2009).

Discussion of Internal and External Validity, Reliability, Generalizability, and Limitations

The most prominent threat to validity was maturation (Fraenkel, Wallen, & Hyun, 2019). The participants were preschool-aged students who typically learn new skills rapidly. They were in a classroom environment everyday where they continued to work on play skills outside of the intervention that was being taught. The participants were likely to show some improvement in play skills and social interactions without the use of the intervention due to the events occurring in their natural environment. While it would be unethical to discourage or prevent the acquisition of new skills, the researcher utilized a multiple baseline design across participants to mitigate the threat. By beginning intervention at different times for each participant, the change in behavior should occur in conjunction with the implementation of the intervention (Johnston & Pennypacker, 2009).

Another threat to validity was the presence of other students in the classroom and the effect they had on the participants. In order to minimize this threat, the researcher taught the participants the skill of using the visual script in a designated space that did not have other students present. During the training sessions, the researcher explained to the participant that when they play in the classroom and use the visual script, there may be other students who approach them with questions. This was done by saying, “When you have your script in the classroom, some of the other kids might come ask you what it is. You can tell them that it is a tool that helps you play with your friends.” The term “tool” is a word that is used consistently in all of the classrooms at the school, therefore it is not a new concept.

Researcher bias was accounted for by the use of a research protocol that explicitly outlined data collection procedures and data analysis procedures. Data collection procedures were clearly defined on the data sheet and operational definitions of each target behavior were provided. A procedural fidelity checklist for script training was used and is included in Appendix G. A second observer assessed the procedural fidelity of the researcher for a minimum of 25% of the script training sessions as well. Reliability was enhanced by assessing interobserver agreement (IOA) for at least 25% of the data collection sessions. Data from two observers were compared on a trial-by-trial basis and coded for each trial as an agreement (both observers concurred on correct or incorrect) or disagreement. IOA was then calculated by dividing the total number of agreements by agreements plus disagreements and converting the quotient into a percentage (Cooper, Heron, & Heward, 2008).

For Liam, the researcher and a second observer collected IOA for two baseline sessions (40% of sessions). During baseline, interobserver agreement averaged 100% for play initiation and 98.3% (range, 96.6% to 100%) for play duration. IOA was collected for nine script training sessions (33% of sessions). During script training, interobserver agreement averaged 94.4% (range, 75% to 100%) for play initiation, and procedural fidelity averaged 100%. For the session with 75% agreement, Liam whispered all of his vocalizations. The play activity that was occurring was “haunted house,” therefore the whispering was appropriate. However, this made it so the second observer was unable to hear what he was saying. Because the observer could not hear him, she recorded some responses as incorrect. IOA was collected for two post training sessions (40% of sessions). During the post training phase, interobserver agreement averaged 100% for play initiation, and 97.9% (range, 96% to 99.8%) for play duration. IOA was collected for four sessions during generalization (50% of sessions). During the generalization phase,

interobserver agreement averaged 100% for play initiation, and 94.2% (range, 84.9% to 100%) for play duration.

For Kaleb, the researcher and a second observer collected IOA for two baseline sessions (25% of sessions). During baseline, interobserver agreement averaged 90% (range, 80% to 100%) for play initiation and 91.5% (range, 82.9% to 100%) for play duration. IOA was collected for 14 script training sessions (54% of sessions). During script training, interobserver agreement averaged 100% for play initiation, and procedural fidelity averaged 100%. IOA was collected for two post training sessions (40% of sessions). During the post training phase, interobserver agreement averaged 100% for play initiation, and 97.8% (range, 95.7% to 99.8%) for play duration.

Generalizations from this research can be made to other cases in terms of varying settings and peers. While this skill was taught in the students' natural environment (the classroom), they encounter many more settings in which appropriate play skills are needed. The peers that they play with also vary. They will encounter new peers at home, in other childcare settings, and as they move into older grades. While generalization cannot be guaranteed, it is the hope that these skills will generalize to natural play interactions.

The greatest limitation of this research was the role that peers played in the interaction. Data were collected on the participants' responses, but many of their responses relied on the responses of their peers. The researcher was not able to control the behavior of the peers, therefore it was likely that the peer responses would deviate from the script. In order to address this limitation, the visual script used allowed for multiple peer responses that fall into categories. For example, there are numerous ways for a peer to decline a request to play with a toy, but any

of these responses fell under the “Peer says no” category. While the script being used allowed for variation in peer responses, it was not able to account for all possibilities.

Description and Justification of the Methods of Analysis

A multiple baseline design is a within-subject design that uses two or more baselines in a coordinated way to allow control-treatment comparisons both within and across baselines (Johnston & Pennypacker, 2009). Like an AB design, there are two phases involved: A and B. However, the B phase is introduced separately for each participant. For example, for a multiple baseline design across participants, participant 1 is introduced to the intervention first, while participant 2 remains in baseline. Participant 2 is then introduced to the intervention, while participant 3 remains in baseline, and so on. This creates one AB comparison for each baseline, but multiple AB comparisons across the baselines (depending on how many baselines there are). The target behavior and the setting remain the same, but the participant component differs. Each baseline in one study involves a different participant. There is one AB comparison for each participant, but there are multiple AB comparisons across baselines (Johnston & Pennypacker, 2009).

This design shows experimental control because, theoretically, the change in responding occurs when the intervention condition begins. The baseline data should be relatively stable (highest and lowest percentage of correct responses falls within 30% of each other), and the researcher begins intervention with the participant whose responding was the most stable. While there is not a replication, an AB comparison is made across participants (Johnston & Pennypacker, 2009). When the first participant begins intervention, there should be no significant change in responding from the second and third participants. When the second participant begins intervention, the third should still show a stable level of responding in

baseline. Visual analysis of the resulting graph should show a functional relation because the behavior change occurs with the condition change. If the change in behavior does not occur in conjunction with the condition change, it is unclear whether or not the behavior change is the result of the intervention (Johnston & Pennypacker, 2009).

The most prominent strength of a multiple baseline design is that it allows for the demonstration of experimental control without the need for a reversal or return to baseline (Johnston & Pennypacker, 2009). Because each participant starts intervention at a different time, the researcher can identify whether or not the change in behavior was a result of the treatment based off of when the change in behavior occurred. This design method was chosen because there is no need for a return to baseline. A return to baseline would not be reasonable in this situation because a new skill is being taught. The participants are unlikely to unlearn the skill that is being taught if intervention is stopped. They may not be as successful in their play interactions, but the skill is unlikely to disappear from their repertoire. In addition, it would be unethical to remove a support that has been put into place in order to help the student succeed.

Protection of Human Subjects

In order to protect the study participants involved in this research, approval from the Institutional Review Board (IRB) at James Madison University was given prior to beginning the study. The IRB provides oversight to research conducted and ensures that no harm comes to the study participants. In addition to IRB approval, all participant information was kept confidential in compliance with the Health Insurance Portability and Accountability Act (HIPPA). Information was not shared with the researcher without written permission from the parents/guardians of the participants in the study. Participants had the option to leave the experiment at any time with no repercussions.

Results

The two research questions that this study sought to answer were (a) will the use of a visual script that includes multiple peer responses increase the number of appropriate reciprocal responses to the peer during play time, and (b) following successful initiation and reciprocal responding with the use of the visual script, will the duration of the participants ʼplay interactions increase? This section will describe the results for the dependent measures, as well as discuss the answers to the two research questions.

Baseline

Liam was observed for a total of five baseline sessions across five days. During baseline, Liam engaged in 40% of the steps in the task analysis (TA) during the first session. During this session, he approached a peer, and then stood there quietly. The peer then asked Liam if he wanted to play. For the second session, he did not approach the peer, but a peer came up to him and asked if he wanted to play (engaged in 20% of the steps in the TA). For the next three sessions, Liam engaged in 0% of the steps in the TA. The resulting data show a low-level, decreasing trend that stabilizes during the last three sessions. These data are graphically displayed in Figure 1. In terms of duration of play, Liam engaged in cooperative play with one or more peers for an average of 1.82 minutes across five sessions. These data are graphically displayed in Figure 2.

Kaleb was observed for a total of eight baseline sessions across eight days. During baseline, Kaleb engaged in 0% of the steps in the TA during the first session. During the following sessions, he engaged in 0%, 40%, 0%, 20%, 20%, 60%, and 40% of the steps in the TA, respectively. Kaleb did not ask a peer to play in any of the baseline sessions. The resulting data do not show a trend, and remain at a low-to-mid level. These data are relatively variable

when compared to Liam's data. These data are graphically displayed in Figure 1. In terms of duration of play, Kaleb engaged in cooperative play with one or more peers for an average of 3.27 minutes across eight sessions. These data are graphically displayed in Figure 2.

Script Training

Liam's script training data do not show a trend and remain at a high level. There was some variability at the beginning of each set, but the data stabilized once he reached mastery. Script training for Liam took place for a total of 28 sessions across five days. For each set, he responded correctly for 100% of the steps in the TA for the first session with an immediate prompt (0-second delay). A 3-second delay was then used until he answered correctly before the prompt in 100% of opportunities for three consecutive sessions. He reached mastery for the first set during session 13, the second set during session 19, and the fourth set during session 33. Liam never reached mastery for the third set. The key component of the scenario in the third set was responding that he does not want to play with the toy that is suggested by a peer. Liam refused to say that he did not want to play (i.e. saying "No thanks.") by saying "No, I don't want to say that." When asked why, he responded that he would still play with toys he doesn't like as much because he did not want to hurt his friend's feelings. He clearly articulated his reasoning, so after five consecutive sessions where he responded correctly before the prompt for every other step, the researcher decided to move on to the next set following session 27. These data are graphically displayed in Figure 1.

Script training for Kaleb took place for a total of 27 sessions across six days. For each set, he responded correctly for 100% of the steps in the TA for the first session with an immediate prompt (0-second delay). A 3-second delay was then used until he answered correctly before the prompt in 100% of opportunities for three consecutive sessions. He reached mastery

for the first set during session 22, the second set during session 27, the third set during session 31, and the fourth set during session 35. Kaleb's script training data show an increasing trend during set one, and then remain at a high level for the next three sets. There was a high degree of variability during set one, but the data stabilized in the next three sets. Training for set one was Kaleb's first exposure to the script. The first three steps in the TA are the same for all four sets. It took Kaleb a significant amount of time to complete the first three steps correctly before a prompt was provided. Once he reached mastery for set one, he maintained the skill of correctly completing the first three steps before the prompt in the last three sets. These data are graphically displayed in Figure 1.

Post Training

Both Liam and Kaleb engaged in 100% of the steps in the TA for the first five sessions of the post training phase. Therefore, both met mastery criteria (responding correctly and independently in 100% of opportunities for five consecutive sessions) immediately following script training. The data for both participants do not show a trend and remain stable at a high level. These data are graphically displayed in Figure 1.

Both participants increased their average duration of play by 6.14 minutes. Liam engaged in cooperative play with one or more peers for an average of 7.96 minutes across the five post training sessions. These data show an increase from baseline (average of 1.82 minutes) by 6.14 minutes. Kaleb engaged in cooperative play with one or more peers for an average of 9.41 minutes across the five post training sessions. These data show an increase from baseline (average of 3.27 minutes) by 6.14 minutes. These data are graphically displayed in Figure 2.

Generalization

The generalization phase for Liam took place for a total of eight sessions. During the first session of generalization, he engaged in 80% of the steps in the TA without using the script. During the following sessions, he engaged in 100%, 100%, 80%, 80%, 80%, 67%, and 80% of the steps in the TA, respectively. These data show a slight decreasing trend, but remain at a relatively high level. These data are graphically displayed in Figure 1. Prior to the beginning of this phase, the researcher instructed the teacher to discuss play options with Liam before he entered play (as detailed in the methods section). However, the classroom teacher did not do this before any of the generalization sessions. It is likely that this would have changed the results and potentially yielded more stable data. In terms of duration of play, Liam engaged in cooperative play with one or more peers for an average of 5.42 minutes across eight sessions (an increase of 3.6 minutes from baseline). These data are graphically displayed in Figure 2. Again, it is hypothesized that the average play duration would have been greater had the teacher discussed play options with him prior to the beginning of each session.

Kaleb was not able to move into the generalization phase because the school closed due to the COVID-19 pandemic. Given that his post-training data were identical to Liam's, the researcher hypothesized that play initiation skills would generalize and the average play duration would remain longer than baseline, but this hypothesis cannot be tested.

Social Validity

The social validity surveys (both teacher and participant) were given to the teachers on the last day of school before it was closed. However, neither teacher had the opportunity to complete the survey, nor were they able to give the survey to the participants. The researcher was able to talk with Liam's teacher about the effects of the intervention. His teacher noted that she

found the intervention extremely effective and commented on several occasions of Liam “talking through the steps of how to ask a friend to play.” Despite this, there is no concrete data to support the claim that the intervention was socially valid due to the unpredicted closing of the school.

Discussion

The purpose of this study was to determine the effectiveness of using a visual script that includes multiple peer responses on the participants' appropriate reciprocal responses to a peer during play time. The first research question addressed whether the use of a visual script that includes multiple peer responses will increase the number of appropriate reciprocal responses to the peer during play time. After script training, both Liam and Kaleb reached mastery criterion during the first five sessions of post training. Both participants engaged in 100% of the steps in the TA for five consecutive sessions immediately following script training. Responding occurred at a high level and remained stable. These results indicate that while using the visual script in the classroom, the number of appropriate reciprocal responses to a peer during play time did increase.

When the visual script was removed (generalization phase), responding was more variable, but still occurred at a relatively high level when compared to baseline. Liam engaged in an average of 83.375% of the steps in the TA across eight sessions. While this average is lower than during post training, it is still significantly higher than baseline (average of 16%). Again, these results indicate that the number of appropriate reciprocal responses to a peer during play time increased after the visual script was removed. The data suggests that the skill of initiating play and responding to peer responses was generalized to the natural environment.

The second research question examined if the duration of the participants 'play interactions increased. During post training, both participants' duration of play increased by 6.14 minutes. These results indicate that when the participants used the visual script, the average duration of their play interactions across sessions increased. For Liam, when the visual script was removed (generalization phase), the average duration of play decreased from post training to

5.42 minutes. However, the duration is still significantly higher than it was during baseline (average of 1.82 minutes). It is possible that this decrease was due to the lack of a conversation between Liam and the classroom teacher prior to beginning play. Despite this, the data suggests that the skill of maintaining play interactions still generalized to the natural environment even without teacher assistance.

Limitations

The researcher highlights three limitations for this study. The first limitation is the number of participants. Because only two participants were included in the study, comparisons could not be made across a larger number of students. While the behavior change did occur only after the intervention was implemented, the results only show the effectiveness of the visual script on two children. Therefore, the only conclusion that can be drawn is that the visual script was effective in increasing both the play initiation and duration of two students. Future studies should include more participants, as well as replicate the procedures to determine if the current findings can be demonstrated with other participants.

A second limitation is that maintenance probes were not included due to time constraints. Because long-term maintenance was not assessed within this study, there was not a demonstration of socially significant change that lasted over time. Future studies should incorporate maintenance probes into the data in order to determine the lasting effects of the intervention over time.

The third limitation was the lack of a generalization phase for Kaleb. The unpredicted closing of the school due to the COVID-19 pandemic prevented the researcher from assessing generalization. Future studies are unlikely to have the same limitations, but should continue the study until generalization can be assessed.

Contribution to Current Research

This research contributes to the current literature on play skill instruction for young children. The current literature contains evaluations of the effectiveness of using scripts to teach cooperative play skills. There are very few studies that examine how to teach appropriate responses to peers' play preferences. The findings from this study suggest that teaching children that their peers will respond differently when asked to play, and in turn how to respond, is an effective way to increase the amount of time they spend playing cooperatively with peers.

Areas for Future Research

One area for future research would be to implement this intervention with students with disabilities. This study demonstrated the effectiveness of the visual script with two students who are typically-developing, therefore it cannot be assumed that it would have the same level of effectiveness for students with disabilities. While this was not possible due to funding limitations, it would be beneficial to use this visual script in tandem with a speech generating device (SGD) in order to benefit students with complex communication needs (CCN). If this were the case, the button that can be pressed to read the script out loud would serve the purpose of communicating the message to the peer, rather than just reminding the participant what the script said.

A second area for future research would be to extend this study and examine the effectiveness as an intervention for an entire class. The script could be displayed for the entire class and all students could learn how to use it. Each student would not have their own individual script, but instead they would be taught what to say in each of the different scenarios. This teaching could be done using behavioral skills training (BST) with all of the students.

Finally, this script could serve as a way of teaching practicum students how to help the children in the class interact with their peers. The teachers who participated in this study (as well as others at the school) noted that often times practicum students tell the children what to do or make choices for them when they encounter any challenging behavior during play. If the script were modified to be appropriate for college-aged practicum students, then it could be used as a way to teach them how to teach the children to problem solve during play.

Recommendations for Practice

While this study demonstrated the effectiveness of the visual script with two students, it is not an evidence-based practice and should not be implemented as an intervention on its own until further research is done. However, the basic concept of teaching students that their peers will respond differently when asked to play, and in turn how to respond, can be part of daily classroom social skills instruction. This has the potential to promote prosocial behaviors such as cooperation, sharing, and problem solving.

Figure 1

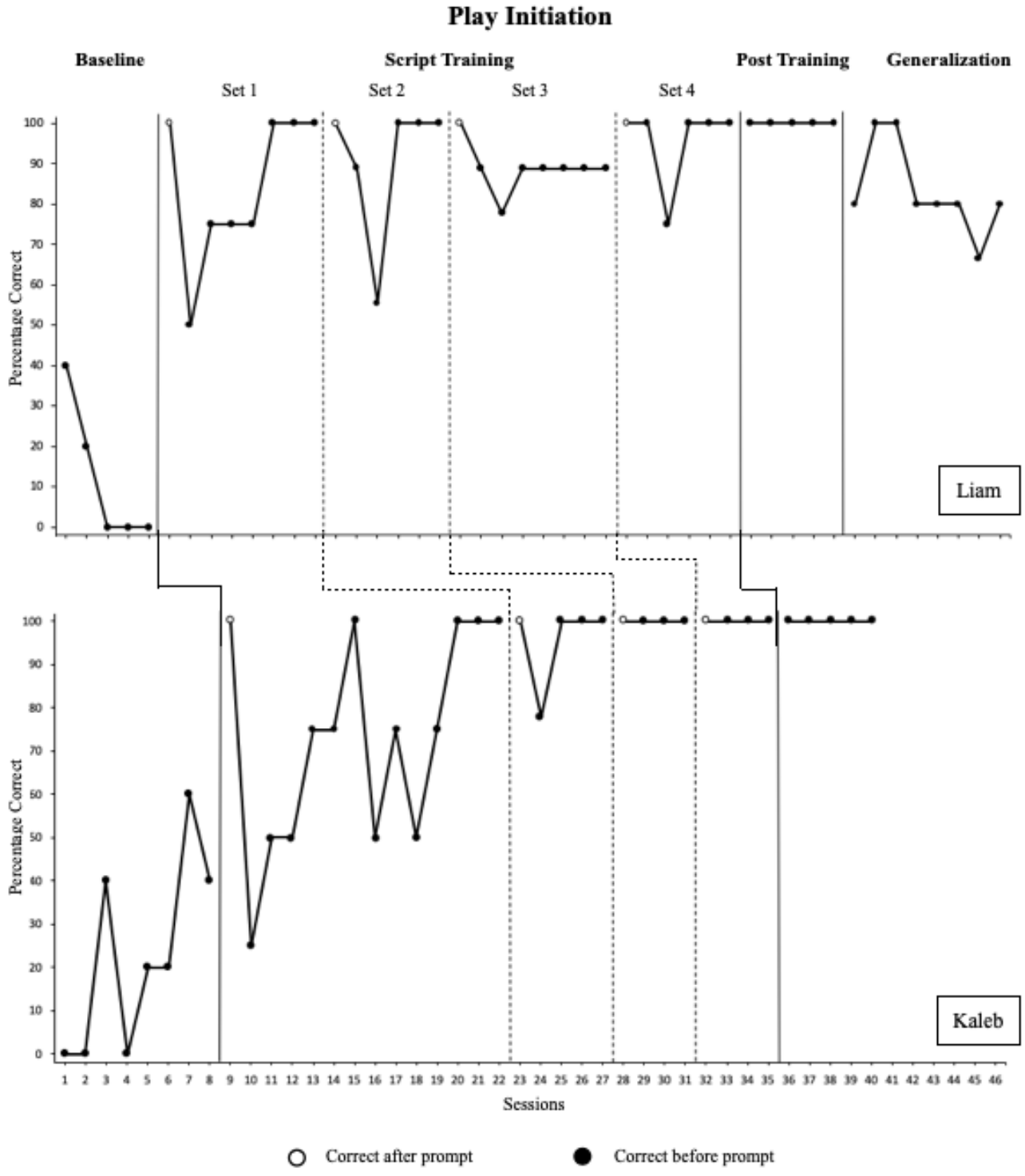
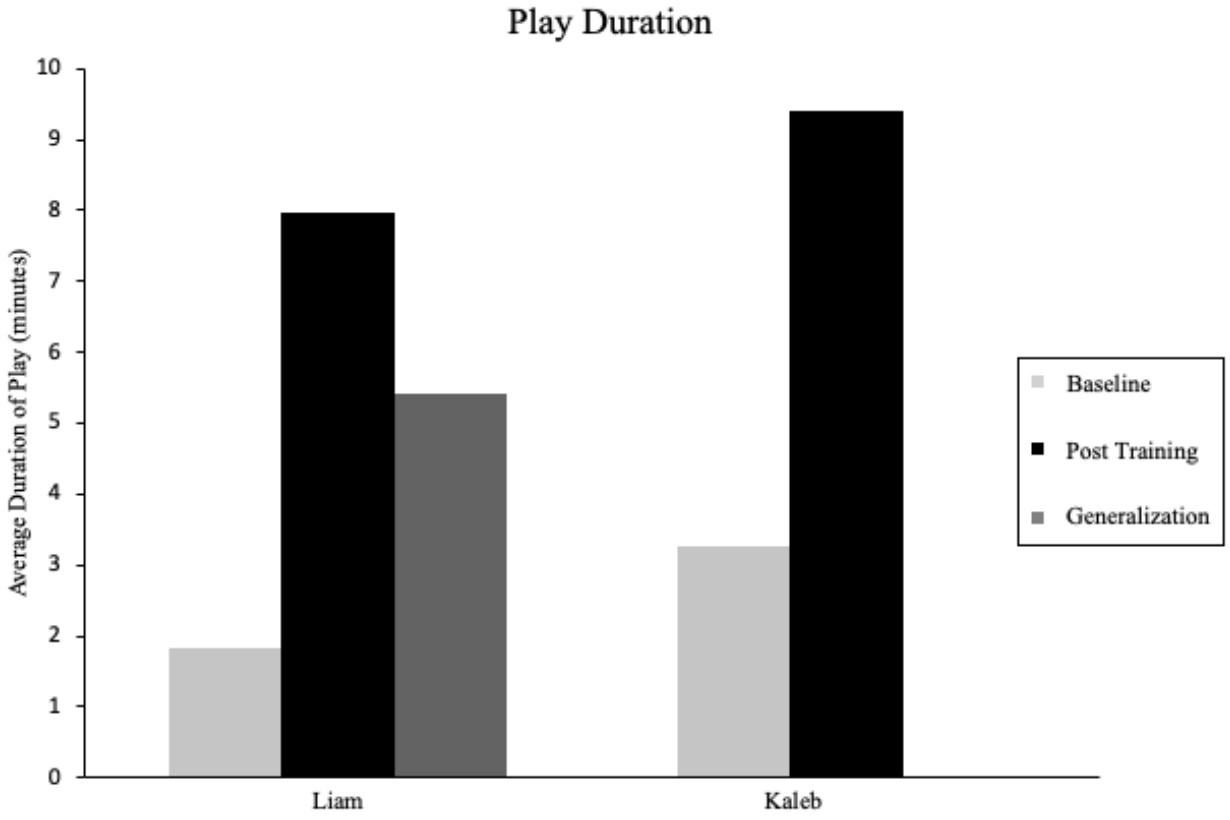

Play Initiation
Baseline
Script Training
Post Training
Generalization
Set 1
Set 2
Set 3
Set 4
Percentage Correct
Liam
Kaleb
Sessions
Correct after prompt
Correct before prompt

Figure 2


Play Duration
Average Duration of Play (minutes)
10
9
8
7
6
5
4
3
2
1
0
Liam
Kaleb
Baseline
Post Training
Generalization

Appendix A

Teacher Questionnaire

1. When thinking of the students in your class, are there any students who have difficulty with play skills (i.e. playing alone instead of with peers, engaging in negative behaviors during play time, refusal to participate in activities that a peer suggests, leaving play when a peer suggests a new activity)? If so, please list the students' initials below.

   _____

2. For each of these students, please fill out the chart below.

Student Initials	What does the behavior look like?	When is the behavior most likely to occur?	How often does the behavior occur?	What usually happens after the behavior occurs?

3. Do you have any other comments that you would like to make about any of these students?

   _____

   _____

   _____

   _____

Participant Name: _____ Date: _____

Behavior				+ / -
Approaches peer				
Appropriately gets peer's attention (says name, makes eye contact, taps them lightly)				
Asks if the peer wants to play (either with a toy or engage in an activity)				
Waits for peer to respond				
Peer says yes	**Peer says no**			
Plays with the peer	Asks peer if they want to play something else			
	Waits for peer to respond			
	Peer says yes		**Peer says no**	
	Asks what the peer wants to play with (or waits for peer to make a suggestion)			
	Waits for the peer to respond			
	Participant wants to play	**Participant does not want to play**		
	Plays with the peer	Says "No thank you."	Says "Okay."	
		Approaches a new peer (start new data sheet)	Approaches a new peer (start new data sheet)	

Total Correct and Independent: _____

Percentage Correct and Independent: _____

Duration of Play Interaction: _____ min. _____ sec.

Appendix C

That data sheet for each set is comprised of multiple blank copies of the corresponding data table. The operational definitions are included on the top of each data sheet. The definitions are the same as the ones included in Appendix F.

Set 1 Date: _____ Delay Interval: _____	
1. Gets play partner's attention	
2. Asks play partner if they want to play	
3. Waits for response	
4. Plays with play partner for 2 minutes	
Total:	___/4 ____%

Set 2 Date: _____ Delay Interval: _____	
1. Gets play partner's attention	
2. Asks play partner if they want to play	
3. Waits for response	
4. Asks partner to play something else	
5. Waits for response	
6. Asks partner what they want to play	
7. Waits for response	
8. Plays with play partner for 2 minutes	
Total:	___/8 ____%

Set 3 Date: _____ Delay Interval: _____	
1. Gets play partner's attention	
2. Asks play partner if they want to play	
3. Waits for response	
4. Asks partner to play something else	
5. Waits for response	
6. Asks partner what they want to play	
7. Waits for response	
8. Says "No thank you."	
9. Approaches new play partner	
Total:	___/9 ____%

Set 4 Date: _____ Delay Interval: _____	
1. Gets play partner's attention	
2. Asks play partner if they want to play	
3. Waits for response	
4. Asks partner to play something else	
5. Waits for response	
6. Asks partner what they want to play	
7. Says "Okay."	
8. Approaches new play partner	
Total:	___/8 ____%

Appendix D

Social Validity Survey for Teachers

Please fill out this survey about the play skills intervention that was implemented with one or more of your students. This survey is NOT required, but will provide feedback to the researcher. If you choose to complete the survey, rank each item based on the following scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

	1	**2**	**3**	**4**	**5**
The intervention focuses on an important behavior.					
The target behavior is of sufficient concern to warrant the use of this intervention.					
I believe that this intervention will produce effective results.					
I understand the intervention steps.					
The intervention is easily incorporated into my classroom system.					
I believe that I can accurately implement this intervention in my classroom.					
I have the necessary materials to implement this intervention accurately.					
The time requirements of this intervention are reasonable.					

Additional Comments:

Source: Maximize Intervention Success. (n.d.). Retrieved from https://iris.peabody.vanderbilt.edu/module/fba/cresource/q3/p10/.

Appendix E

Social Validity Survey for Participants

Please read the following statement to the participant.

"I'm going to ask you some questions about the tool you used to help you play with your friends. You only need to answer these questions if you want to. If you do not want to answer just tell me and we can be all done."

If the participant agrees to answer the questions, continue to the next section. Read each question and allow the participant to circle the symbol that corresponds to their response. Please record any relevant comments that the participant may make.

Did you like using this tool to help you play?		
Did this tool help you play with your friends?		
Do you think you could use this tool without a teacher's help?		

Additional Comments:

Appendix F

Operational Definitions of Steps in TA

- **Approaches peer** → walks to the peer and stands/sits within 2 feet of them

- **Appropriately gets peers attention** → engages in one of the following responses
    - Gently taps peer on arm or shoulder
    - Says the peer's name
    - Greets the peer (says "Hi," "Hello," or "Hey")
    - Makes eye contact with the peer

- **Asks peer if they want to play** → engages in one of the following responses
    - "Do you want to play (activity or toy) with me?"
    - "Do you want to play (activity or toy)?"
    - "Can we play (activity or toy)?"
    - "Let's play (activity or toy)."

- **Waits for peer to respond** → stands/sits quietly within 2 feet of the peer until the peer responds (If the peer does not respond after 10 seconds, the participant can walk away)

- **Plays with peer** → uses the toy or participates in the shared activity with the peer

- **Asks peer if they want to play with something else** → engages in one of the following responses
    - "Do you want to play something else?"
    - "Do you want to play with a different toy?"
    - "Do you want to play a different game?"
    - "Can we play something else?"

- **Asks peer what they want to play with** → engages in one of the following responses
    - "What do you want to play?"
    - "What toy do you want?"
    - "What do you want to do?"

- **Says "No thank you."** → says "No thank you" or "No thanks"

- **Says "Okay."** → Says "Okay" or "That's okay"

- **Approaches new peer** → walks to a new peer and stands/sits within 2 feet of them

- **Onset of play interaction** → participant sets the iPad down and either touches a toy/material or says something to the peer in relation to the activity

- **Offset of play interaction** → participant says that they are done playing or walks away from the area (unless getting a related material or acting out a dramatic play scene)

Appendix G

Procedural Fidelity Checklist

Set 1	
	1. "It's time to practice using our tool."
	2. Wait either 0 or 3 seconds for participant to get researcher's attention.
	3. Provide prompt if necessary.
	4. Wait either 0 or 3 seconds for participant to ask researcher to play.
	5. Provide prompt if necessary.
	6. Respond by saying that you would like to play.
	7. Play with the participant for 2 minutes.

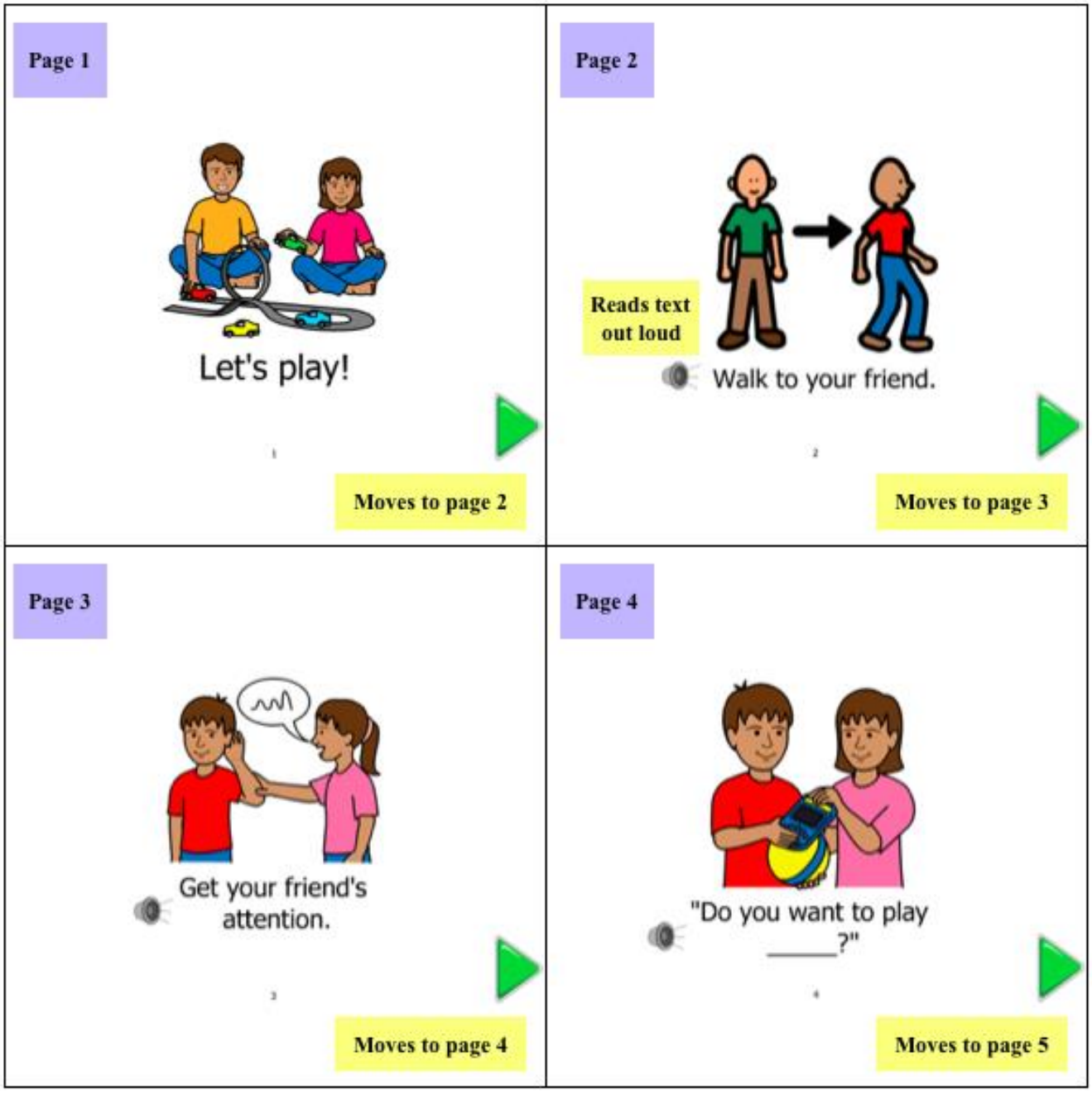
Set 2	
	1. "It's time to practice using our tool."
	2. Wait either 0 or 3 seconds for participant to get researcher's attention.
	3. Provide prompt if necessary.
	4. Wait either 0 or 3 seconds for participant to ask researcher to play.
	5. Provide prompt if necessary.
	6. Respond by saying that you would like to play with something else.
	7. Wait 0 or 3 seconds for participant to ask what you want to play with.
	8. Provide prompt if necessary.
	9. Respond by saying that you would like to play with _____.
	10. Play with the participant for 2 minutes.

Set 3	
	1. "It's time to practice using our tool."
	2. Wait either 0 or 3 seconds for participant to get researcher's attention.
	3. Provide prompt if necessary.
	4. Wait either 0 or 3 seconds for participant to ask researcher to play.
	5. Provide prompt if necessary.
	6. Respond by saying that you would like to play with something else.
	7. Wait 0 or 3 seconds for participant to ask what you want to play with.
	8. Provide prompt if necessary.
	9. Respond by saying that you would like to play with _____.
	10. Wait 0 or 3 seconds for participant to say "No thanks."
	11. Provide prompt if necessary.
	12. Wait 0 or 3 seconds for participant to approach new play partner.
	13. Provide prompt if necessary.

Set 4	
	1. "It's time to practice using our tool."
	2. Wait either 0 or 3 seconds for participant to get researcher's attention.
	3. Provide prompt if necessary.
	4. Wait either 0 or 3 seconds for participant to ask researcher to play.
	5. Provide prompt if necessary.
	6. Respond by saying that you would not like to play with something else.
	7. Wait 0 or 3 seconds for participant to say"Okay."
	8. Provide prompt if necessary.
	9. Wait 0 or 3 seconds for participant to approach new play partner.
	10. Provide prompt if necessary.

Appendix H

Slides in Visual Script



Page 5

Listen to your friend.

5

Moves to page 6

Page 6

What did your friend say?

yes

no

Moves to page 7

6

Moves to page 8

Page 7

Play with your friend!

6

Moves to page 1

Page 8

"Do you want to play something else?"

17

Moves to page 9

Page 9

Listen to your friend.

Moves to page 10

Page 10

What did your friend say?

yes

Moves to page 11

no

Moves to page 13

Page 11

yes

Moves to page 7

no

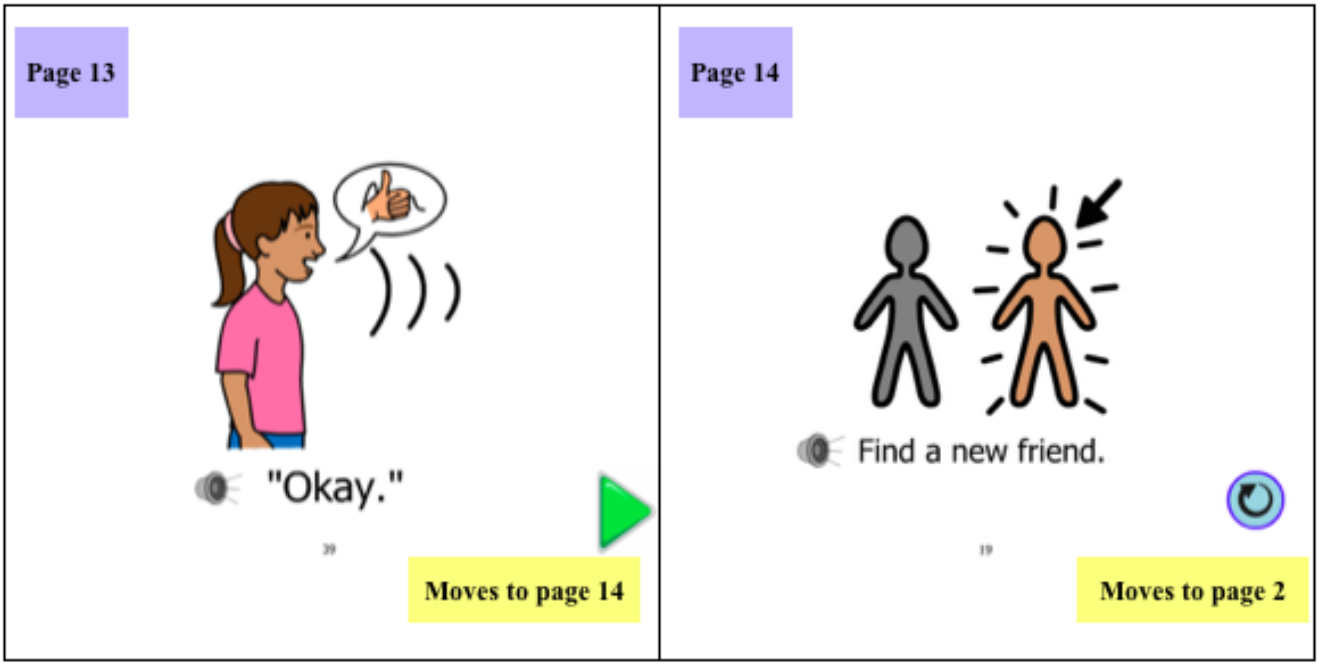
Moves to page 12

Do I want to play?

Page 12

"No thanks."

Moves to page 14


Page 13
"Okay."
Moves to page 14
Page 14
Find a new friend.
Moves to page 2

References

American Speech-Language-Hearing Association. (1993). Definitions of communication disorders and variations [Relevant Paper]. Available from www.asha.org/policy.

Barry, L. M., & Burlew, S. B. (2004). Using social stories to teach choice and play skills to children with autism. *Focus on Autism and Other Developmental Disabilities*, *19*(1), 45-51.

Bandura, A., & Walters, R. H. (1977). *Social learning theory* (Vol. 1). Prentice-hall.

Barton, E. E., & Wolery, M. (2008). Teaching pretend play to children with disabilities: A review of the literature. *Topics in Early Childhood Special Education*, *28*(2), 109-125.

Beckman, P., & Lieber, J. (1994).The social strategy rating scale: An approach to evaluating social competence. *Journal of Early Intervention, 18*, 1-11.

Bellini, S., & Akullian, J. (2007). A meta-analysis of video modeling and video self-modeling interventions for children and adolescents with autism spectrum disorders. *Exceptional Children*, *73*(3), 264-287.

Bergen, D. (2002). The Role of Pretend Play in Children's Cognitive Development. *Early Childhood Research and Practice, 4*, 2–12.

Boudreau, E., & D'Entremont, B. (2010). Improving the pretend play skills of preschoolers with autism spectrum disorders: The effects of video modeling. *Journal of Developmental and Physical Disabilities*, *22*(4), 415-431.

Chan, J. M., & O'Reilly, M. F. (2008). A Social Stories™ intervention package for students with autism in inclusive classroom settings. *Journal of Applied Behavior Analysis*, *41*(3), 405-409.

Collins, B. C. (2012). *Systematic instruction for students with moderate and severe disabilities*.

Paul H. Brookes Pub. Co.

Cooper, J. O., Heron, T. E., & Heward, W. L. (2008). *Applied behavior analysis* (2nd ed.). Pearson/Merrill-Prentice Hall.

Craig-Unkefer, L. A., & Kaiser, A. P. (2002). Improving the Social Communication Skills of At-Risk Preschool Children in a Play Context. *Topics in Early Childhood Special Education*, *22*(1), 3–13. doi: 10.1177/027112140202200101

Crozier, S., & Tincani, M. (2007). Effects of social stories on prosocial behavior of preschool children with autism spectrum disorders. *Journal of Autism and Developmental Disorders*, *37*(9), 1803-1814.

Dowrick, P. W. (1999). A review of self modeling and related interventions. *Applied and Preventive Psychology*, *8*(1), 23-39.

Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (2019). *How to design and evaluate research in education* (10th ed.). McGraw Hill Education.

Ganz, J. B., & Flores, M. M. (2008). Effects of the use of visual strategies in play groups for children with autism spectrum disorders and their peers. *Journal of Autism and Developmental Disorders*, *38*(5), 926-940.

Ganz, J. B., & Flores, M. M. (2010). Supporting the play of preschoolers with autism spectrum disorders: Implementation of visual scripts. *Young Exceptional Children*, *13*(2), 58-70.

Gray, C. (2003). Social Stories. Retrieved April 13, 2003, from http://www.thegraycenter.org

Goldstein, H., & Cisar, C. L. (1992). Promoting Interaction During Sociodramatic Play: Teaching Scripts To Typical Preschoolers And Classmates With Disabilities. *Journal of Applied Behavior Analysis*, *25*(2), 265–280. doi: 10.1901/jaba.1992.25-265

Hestenes, L. L., & Carroll, D. E. (2000). The play interactions of young children with and

without disabilities: Individual and environmental influences. *Early Childhood Research Quarterly*, *15*(2), 229–246. doi: 10.1016/s0885-2006(00)00052-1

Johnston, J. M., & Pennypacker, H. S. (2009). *Strategies and tactics of behavioral research* (3rd ed.). Routledge.

Kokina, A., & Kern, L. (2010). Social Story™ interventions for students with autism spectrum disorders: A meta-analysis. *Journal of autism and developmental disorders*, *40*(7), 812-826.

Lee, S. Y., Lo, Y. Y., & Lo, Y. (2017). Teaching functional play skills to a young child with autism spectrum disorder through video self-modeling. *Journal of Autism and Developmental Disorders*, *47*(8), 2295-2306.

Malmberg, D. B., Charlop, M. H., & Gershfeld, S. J. (2015). A two experiment treatment comparison study: Teaching social skills to children with autism spectrum disorder. *Journal of Developmental and Physical Disabilities*, *27*(3), 375-392.

Maximize Intervention Success. (n.d.). Retrieved from https://iris.peabody.vanderbilt.edu/module/fba/cresource/q3/p10/.

Najdowski, A. C., St. Clair, M., Fullen, J. A., Child, A., Persicke, A., & Tarbox, J. (2018). Teaching children with autism to identify and respond appropriately to the preferences of others during play. *Journal of Applied Behavior Analysis*, *51*(4), 890-898.

Sam, A., & AFIRM Team. (2015). Social narratives. Chapel Hill, NC: National Professional Development Center on Autism Spectrum Disorder, FPG Child Development Center, University of North Carolina. Retrieved from http://afirm.fpg.unc.edu/Social-narratives

Schank, R.C.,& Abelson, R.P. (1977). Scripts, plans, goals and understanding: An inquiry into human knowledge structures. Erlbaum.

Schneider, N., & Goldstein, H. (2010). Using social stories and visual schedules to improve socially appropriate behaviors in children with autism. *Journal of Positive Behavior Interventions*, *12*(3), 149-160.

Skinner, B. F. (1957). *Verbal Behavior*. Appleton-Century-Crofts.

Stahmer, A. C., & Schreibman, L. (1992). Teaching children with autism appropriate play in unsupervised environments using a self-management treatment package. *Journal of Applied Behavior Analysis*, *25*(2), 447-459.

Taylor, R., & Iacono, T. (2003). AAC and scripting activities to facilitate communication and play. Advances in Speech-Language Pathology, 5, 79–93.